



**Committee on Transportation and Infrastructure  
Subcommittee on Aviation  
U.S. House of Representatives  
December 2, 2009**

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Good morning Chairman Costello, Ranking Member Petri and members of the Subcommittee. I am grateful for the opportunity to testify before you today on the changing events related to commercial space.

As the largest aerospace trade association in the United States, the Aerospace Industries Association (AIA) represents nearly 300 manufacturing companies with over 631,000 high-wage, highly skilled aerospace employees across the three sectors: civil aviation, space systems and national defense. This includes over 140,000 workers who make the satellites, space sensors, spacecraft, launch vehicles and ground support systems employed by NASA, DoD, NOAA, NRO and other civil, military and intelligence space efforts. Our member companies export 40 percent of their total output, and we routinely post the nation's largest manufacturing trade surplus, which was over \$57 billion in 2008. Aerospace indirectly supports 2 million middle class jobs and 30,000 suppliers from all 50 states. The aerospace industry continues to look to the future, investing heavily in research and development, spending more than \$100 billion over the last 15 years.

We appreciate the efforts of Congress to keep our commercial, civil and national security space programs healthy. And we are pleased that Congress recognizes that space technologies have increasingly become a part of our daily lives and that virtually every part of the U.S. economy has been touched by their applications.

Commercial interests such as banking transactions, business and personal communications, and precise location for our emergency responders, airlines and automobiles all depend on communications and GPS satellites.

Essential national security information and support of our troops' military operations are all dependent upon space assets.

Weather and climate satellites give us life saving warnings and provide us recurring, global wide data on climate change.

Observing, monitoring and exploring space relies on incredibly robust equipment functioning in extremely hostile and demanding environments.

Additionally our space programs, particularly NASA's, remain an excellent source of inspiration for our youth to study science, technology, engineering and mathematics and to enter our aerospace workforce on which much of our nation's transportation, security and economic infrastructure depend. Certainly the exciting work by private companies in expanding the availability of space flight is also a draw for young people - one we hope will increase over the next few years.

We would also like to take this opportunity to commend the FAA's Office of Commercial Space Transportation, which has been very open to thoughtful discussion on issues related to space launch. Their Commercial Space Transportation Advisory Committee (COMSTAC) includes a wide range of industry experts who provide information, advice and recommendations to the Administrator of the FAA on a regular basis. The FAA also hosts an annual Commercial Space Transportation conference. The aerospace industry has found both COMSTAC and the conference to be excellent venues for sharing information and expressing concerns.

AIA believes the FAA has struck the right balance on a difficult issue: how to properly regulate and oversee human commercial spaceflight. On one side of the balance is the need to safeguard the participants and the public. On the other side, this industry is very young and the systems and procedures that fledgling companies are developing are still taking shape. Keep in mind that with the success of SpaceShipOne in 2004, there have been only three human rated commercial space flights to date. We believe the FAA has found a good middle ground in their oversight.

In short, the human commercial launch industry is developing and taking shape. The FAA has developed a sound set of regulations and understands that as this new part of the space and launch industries evolve, the regulations will similarly need to evolve.

There are outside events that could increase and accelerate the FAA's role in licensing and oversight. As you know, the Review of U.S. Human Space Flight Plans Committee, or Augustine Committee, recently provided the administration with a series of options regarding NASA's future direction. One option is continuing with the current "program of record" and proceeding with the development of both the Ares-I human rated launch system and a larger unmanned heavy lift vehicle which would launch equipment bound for the moon. There are options considering different types of heavy lift vehicles which could be human rated. But the committee also considered an approach where commercial launch companies ferry astronauts to and from the International Space Station, thus freeing NASA to focus on its Orion spacecraft flights beyond low Earth orbit to the moon or other destinations of interest.

The Space Shuttle is slated to retire after five more flights. At that time the U.S. will face a human spaceflight "gap" of at least five years. Currently plans to transport American astronauts to the ISS during this break in U.S. human space flight consist of riding aboard the Russian Soyuz spacecraft. Augustine Committee options are currently being considered by the administration. Depending on the response to the various options set forth by the committee it is possible that along with licensing commercial cargo flights to the ISS the FAA could see an accelerated effort for human commercial carriage.

There are other issues related to commercial space launch that are of concern to us, affecting both human flight and cargo payload delivery.

As space launch capabilities have been developed by other nations the U.S. share of commercial launches has decreased significantly. In 2008 only 6 of the 28 worldwide commercial launches were conducted by U.S. companies.

Every other nation with commercial space launch capabilities provides some form of government indemnification against third-party liability. The current third party indemnification regime in the U.S expires this December 31. Elimination of U.S. government indemnification would drive even more launch business overseas and could also impact launches of U.S. civil and national security payloads because the same companies also launch under government contracts.

The current regime sets aside no funds and requires Congressional approval for any payment, so continued indemnification imposes no additional costs to the U.S. taxpayer. We are very pleased that the House recently extended this regime until the end of 2012. It is our hope that the Senate will follow suit before the end of the year. However, while a three year extension prevents the immediate end of this critical regime it is not sufficient because launch manifests can extend out for several years.

Maintaining the regime helps provide a level playing field and strengthens U.S. international competitiveness in a very competitive global space launch market. For our companies it maintains continuity in the business environment. It encourages new entries by U.S. companies into the launch market.

A Congressionally-mandated FAA study of the subject was conducted by The Aerospace Corporation. They and COMSTAC both have endorsed the continuation of the regime. AIA believes the indemnification of U.S. commercial space launch should be made permanent, and the \$1.5 billion tier 2 cap should be lifted.

Space will play a critical role in the infrastructure of the Next Generation Air Transportation System (NextGen). It will surprise no one on this committee that while the aerospace industry is building 21<sup>st</sup> century aircraft, they navigate our skies using a system that largely dates back to the 1960s. The role of satellites to NextGen, for communication and GPS position, navigation and timing will be a critical component. It

is important Congress recognize the crucial link space currently plays and will continue to play in coordinating air traffic.

It will also be important to make plans to integrate human commercial spaceflights into the air traffic control system sooner rather than later. The impacts of these flights during the next few years will be modest, but they will grow over time.

Space Situational Awareness will play a similar role to air traffic control in Earth's orbit. In February two satellites collided, destroying the satellites and creating debris fields. On several occasions the crews aboard the International Space Station have had to take precautions against possible collisions with "space junk." 18,000 larger objects are being tracked in Earth's orbit and 600,000 smaller pieces of debris too small to be tracked pose a serious danger to our space assets.

Collision projections can be made in advance but they are only good for several days, and the current monitoring system must assign priorities. Tracking of human commercial space flights will be necessary and will need to be a priority just as the ISS and Space Shuttle flights are today. Additionally, it has become clear that efforts will be needed to reduce the time objects stay in orbit once their function has come to an end.

We want America's commercial space industry to be vibrant. Our space industrial base designs, develops, produces and supports our spacecraft, satellites, launch systems and supporting infrastructure. We need to keep this base healthy and globally competitive.

One critical aspect of maintaining a healthy base is to reform export controls. While AIA believes it is important to protect critical U.S. capabilities, many U.S. export control policies are counterproductive for our industry, negatively impacting our security interests. While we must keep sensitive technologies out of the wrong hands, we also must facilitate technology trade and cooperation critical to U.S. interests with our friends and allies in a timely manner. Barriers to the export competitiveness of U.S. companies have prompted numerous countries to develop their own indigenous aerospace capabilities, leveraging their own R&D and innovation. Without a cutting edge U.S. space industrial base, our government could also be forced to rely on foreign suppliers for key components.

We also face challenges with our future workforce. AIA members have identified that a "lack of trained technical workforce for the future" is one of the most important long-term issues facing our industry. Currently the U.S. annually graduates just 74,000 engineers in total – covering all fields in the discipline. Further, many of these students are foreign nationals who return home shortly after graduating – which drops the number of new domestically employable engineers under 60,000. In comparison, India and China respectively graduate six and ten times more engineering students each year. The U.S. runs the real risk of losing its skilled engineering lead over other nations.

What can draw more engineering minded students into the discipline of aerospace engineering? I believe the opportunity to expand human spaceflight is exactly the type of project they want to work on, and it is important that the industry that inspires them when they begin high school is present, vibrant and hiring as they leave college.

In conclusion, our commercial space launch industry is at a critical juncture. Commercial spaceflights that can carry humans into space is on the horizon. This launch market is competitive and our share is small. We have a lot of work to do to ensure that this fledgling industry has the opportunity to grow and compete in a global marketplace.

I thank the committee for their time and attention and would be happy to answer any questions.